drops or portions of the melted mixture to form fibers that are graded by length and preferably are in a form of ½ to 1½ inches in length when mixed with amorphous silica. After the combination of fibers and binder solution are mixed together, they are agitated so that the fibers completely absorb the binder solution as shown in block **70**. After the mixing and agitation occurs, a slurry or paste is formed as shown in block **71** which is of a consistency which permits pouring or filling into molds or casting receptacles. The slurry or paste is then molded or cast or formed into this desired shape as shown in block **72**. The molding and casting of a desired shape of the paste may be formed on a continuous line in a flat panel form in which case the material is passed into a drying oven and would not require removal from a mold as shown in block **73**. The step performed at block **73** could be a progressive stamping mold or a rotary mold. After the material passes from the molding or casting operation at block **73**, it is dried as molded panels by firing or by holding in heated molds to dry off the water from the green paste mold. In the preferred embodiment, firing is accomplished at temperatures between 350 degrees Fahrenheit up to 1800 degrees Fahrenheit to drive off the water solution which comprises up to 25% by weight.

After drying or firing the panels at block **74**, the panels are trimmed or machined to a preliminary shape or trimmed or machined to a final shape at block **75**. Apertures and slots and gas ports and burners are formed therein, depending on the intended use of the panel. It will be appreciated that in some forms of individual molds, the edges of the dried panels are so precise that they do not require machining when being fitted together to form an assembled gas combustion chamber. After forming the desired panels in the desire shapes with the desired slots, holes and burners which may be formed by drilling or punching, the panels may be assembled into a combustion chamber shown in block **76** if the production operation is a continuous operation. However, if the panels to be assembled into a combustion chamber are for assembly at a production site or installation site, it is preferred that individual kits be manufactured from which assembled combustion chambers may be made on site to assure minimum damage and minimum cost of shipping. Thus, the desired panels for a particular preformed gas combustion chamber are packaged as a set of preformed parts for shipment as shown in block **77**.

Having explained a preferred embodiment of the present invention used in several different types of fireplaces, it will be appreciated that use of a universal combustion chamber greatly reduces the factory inventory as well as the field site inventory of combustion chambers. The fired and dried fiber reinforced combustion chamber is slightly hydroscopic but non-porous to exhaust gases and may be sealed without a steel or reinforcing backing layer even when used for burning wood logs. The reinforced panel can be made thicker and stronger for wood logs so as to meet wood stove standards and impact tests performed by underwriters as well as meeting zero clearance outside temperature of 160° F. if needed.

Manufacturers of Refractory Ceramic Fibers (RCFS) and aqueous binders publish data sheets on several different RCF. While the exact formulation may differ, the preferred silicate base is vitreous alumina silicate for making high temperature ceramic fibers. An equivalent silicate fiber would be operable when combined with a compatible RCF binder.

What is claimed is:

1. A method of making a universal gas combustion chamber for use in a plurality of different prefabricated gas fireplace units, comprising the steps of:

mixing refractory ceramic fibers (RCFs) with a solution of inorganic binder to form a thick paste slurry,

molding said thick paste slurry into an open box shape fireplace having a plurality of panels comprising a floor panel, at least two side panels and a top panel,

removing said open box fireplace from its mold,

firing said panels to form a non-porous impact resistant open box of panels of a gas fireplace combustion chamber,

assembling stack means, trim means, burner means and said plurality of panels into the gas fireplace combustion chamber to provide said different gas fireplace units, and

sealing the joints between said stack means and said trim means, to form unique fireplace units having a reinforced non-porous gas tight gas combustion chamber.

2. A method as set forth in claim **1** wherein the step of sealing further comprises applying a binder which comprises an aqueous solution of inorganic binder.

3. A method as set forth in claim **2** which further includes the step of machining flanges on the box opening for attaching said trim means to at least one of said panels.

4. A method as set forth in claim **1** wherein said step of molding comprises providing an opening in at least one of said panels forming an exhaust stack aperture in said top or back panel.

5. A method as set forth in claim **4** wherein said step of assembling said burner means includes making an opening in at least one of said panels which comprises gas burner port apertures in said floor panel.

6. A method as set forth in claim **1** which further includes the steps of,

providing flanges on said top panel and said floor panel,

providing flanges on said side panels, and

the step of assembling said fireplace further comprises attaching said trim means to said flanges and door means to said trim means to complete said non-porous gas tight combustion chamber.

7. A method as set forth in claim **1** wherein said open box shaped fireplace comprises at least one substantially flat steel back panels, and

overlapped the mating edges of said steel panel to other panels to form a gas tight heat exchanger panel.

8. A universal open box combustion chamber for use in a plurality of different types of fireplaces comprising,

a floor panel,

a top panel,

two side panels,

said floor panel, said top panel and said side panels each comprising a mixture of vitreous alumina silicate fibers and an aqueous solution of binder formed and dried after molding to provide a gas tight and impact resistant box of panels of a fireplace combustion chamber,

glass door means attached to said panels to provide a gas tight closed box fireplace, and

burner means supported by said floor panel.

9. A universal combustion chamber as set forth in claim **8** wherein said burner means is supported above said floor panel, and

apertures in said side and floor panels for connecting air and gas to said burner means.

10. A universal combustion chamber as set forth in claim **8** wherein said burner means comprises a single open U-shaped panel adapted to seal against said floor panel.

11. A universal combustion chamber as set forth in claim 8 which further comprises a plurality of flat back panels sealed at their mating joints to other panels to form a gas tight combustion chamber.

12. A universal combustion chamber as set forth in claim 8 wherein said burner means comprises connecting panels having flat mating joints, and

a self hardening high temperature adhesive applied in said joints of said burner means to further assure a gas tight seal.

13. A universal combustion chamber as set forth in claim 11 which further includes corner reinforcing means attached to corners of said sidewall panels.

14. A method of making a universal gas combustion chamber for use as a component of a fireplace unit, comprising the steps of:

mixing vitreous alumina fibers with an aqueous solution of inorganic binder to form a thick castable slurry,

forming said thick castable slurry on a forming mold to build up a desired predetermined thickness non-rigid fireplace combustion chamber having an open side for supporting door means and a floor for supporting a gas burner,

drying said formed combustion chamber on the mold to provide an uncured stiff one piece combustion chamber,

stripping away the forming mold, and

heating said uncured one piece combustion chamber at firing temperature to form a rigid non-porous impact resistant combustion chamber ready for assembly of said door means and gas burner to form a unique fireplace.

15. The method as set forth in claim **14** which further includes the steps of forming pluggable aperatures in the side or top panels for attachment of an exhaust stack.

16. The method as set forth in claim **14** which further includes the steps of supporting a gas burner unit on the floor panel, and

providing apertures in said fireplace unit through which fresh air for combustion is conducted to said gas burner.

17. The method as set forth in claim **16** which further includesattaching door means to said open side of said combustion chamber.

18. The method as set forth in claim **17** wherein the step of attaching door means comprises the step of sealing a glass door panel to the vertical and horizontal edges of said open side of said fireplace combustion chamber.

* * * * *